

REMARKS

The Examiner has rejected claims 13 and 15-18 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Pub. No. 2001/0045175 to Ouchi et al. ("Ouchi") in view of JP 2000-191973 to Fukui ("Fukui"), and further in view of U.S. Patent Application Pub. No. 2001/0045175 to Satoh et al. ("Sato"). The Examiner has also rejected claims 13 and 15-18 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,063,834 to Kappele et al. ("Kappele") in view of Fukui, and further in view of Satoh. In addition, the Examiner has rejected claims 13, 16, and 18 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,888,287 to Brown et al. ("Brown") in view of Fukui, and further in view of Satoh. The Examiner has also rejected claims 19 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Ouchi in view of Fukui and Sato, and further in view of U.S. Patent No. 6,871,941 to Horii et al. ("Horii"). In addition, the Examiner has rejected claims 19 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Kappele in view of Fukui and Sato, and further in view of Horii.

Claims 1-12 stand previously withdrawn. Claims 13 stand currently amended, and Claim 14 stand previously canceled. Claims 1-13 and 15-20 are currently pending. The following remarks are considered by applicant to overcome each of the Examiner's outstanding rejections to current claims 13 and 15-20. An early Notice of Allowance is therefore requested.

I. SUMMARY OF RELEVANT LAW

The determination of obviousness rests on whether the claimed invention as a whole would have been obvious to a person of ordinary skill in the art at the time the invention was made. In determining obviousness, four factors should be weighed: (1) the scope and content of the prior art, (2) the differences between the art and the claims at issue, (3) the level of ordinary skill in the art, and (4) whatever objective evidence may be present. Obviousness may not be established using hindsight or in view of the teachings or suggestions of the inventor. The

Examiner carries the burden under 35 U.S.C. § 103 to establish a prima facie case of obviousness and must show that the references relied on teach or suggest all of the limitations of the claims.

II. REJECTION OF CLAIMS 13 AND 15-18 UNDER 35 U.S.C. §103(A) BASED ON OUCHI IN VIEW OF FUKUI AND SATOH

On page 2 of the current Office Action, the Examiner rejects claims 13 and 15-18 under 35 U.S.C. § 103(a) as being unpatentable over Ouchi in view Fukui and Satoh. These rejections are respectfully traversed and believed overcome in view of the following discussion.

The Cited References CANNOT Be Combined to Arrive At the Claimed Invention

Amended Claim 13 states:

“A water base ink for ink-jet recording comprising:

“a **self-dispersible** coloring agent;

“a propylene glycol ether; and

“a **surfactant represented by the following general formula (3):**

“ $R^1-O-(CH_2CH_2O)_n-SO_3M$ (3)

“wherein n represents an integer of 2 to 4, R^1 represents an alkyl group having a number of carbon atoms of 12 to 15, and M represents Na or triethanolamine; and

“wherein the propylene glycol ether is **dipropylene glycol propyl ether.**” (emphasis added).

The Examiner admits that Ouchi fails to disclose a surfactant represented by the Formula (3) of the current application. As a result, the Examiner cites to Fukui for the disclosure of Formula (3). However, the teachings of Fukui are directed to an ink containing a non-self-dispersible coloring agent (i.e., a pigment), while Claim 13 contains a self-dispersible coloring agent. See Fukui, Abstract. Non-self-dispersible coloring agents behave very differently from

self-dispersible coloring agents. Surfactants that work well with non-self-dispersible coloring agents do not necessarily work well with self-dispersible coloring agents.

In fact, Fukui specifically teaches that the disclosed compound of Formula 1 is included solely to disperse the pigment. This is made abundantly clear by the abstract, which states that the ink composition of Fukui comprises water, (A) a pigment, (B) a surfactant, (C) a pH adjuster, (D) a shear viscosity reducing agent, and (E) a moisturizer, where the surfactant of component (B) is a compound of Formula 1. As such, Fukui relates to an aqueous ink which uses a pigment. As is well known, pigments are insoluble in water, and thus are not self-dispersible. As such, the compound of Formula 1 (the only surfactant included in the ink of Fukui) must necessarily be included for the sole purpose of dispersing the pigment.

In this way, Fukui is no different from the previous reference used by the Examiner, namely JP 2001-081372 to Ikemoto et al. ("Ikemoto"). Applicants previously argued that the combination of Ikemoto with the other references cited failed to render the current claims obvious. Examiner appears to have agreed with Applicants' arguments, as Examiner has withdrawn all of the rejections relating to Ikemoto. Therefore, Applicants must respectfully assert that the combination of Fukui with the other references also fails to render the current claims obvious.

Contrasting Fukui, the surfactants disclosed in Ouchi are not included as dispersants as the ink of Ouchi contains a self-dispersing pigment. As stated in Ouchi, "[t]he pigment for use in the invention preferably include those pigments which can be well dispersed in the above-described vehicles...." Ouchi, P. 5, ¶ [0067]. Moreover, there is no suggestion in either Ouchi or Fukui that the compound of Formula 1 disclosed in Fukui (intended for use with a non-self-dispersible coloring agent) is substitutable for the surfactants disclosed in Ouchi (intended for use with a self-dispersible coloring agent). As a result, one of ordinary skill in the art would find (1) no motivation to combine the teachings of Fukui with those of Ouchi and (2) no reasonable expectation of success of combining the teachings of Fukui with those of Ouchi.

The Examiner asserts that it is obvious to combine Ouchi and Fukui. However, Examiner's logic on this matter is flawed. Fukui clearly teaches dispersing a non-self-dispersible pigment by using a dispersant. Ouchi, on the other hand, teaches the use of a self-dispersing pigment. Once the pigment is self-dispersing, there is no need to use a dispersing agent. Therefore, there is no reason to combine the dispersant of Fukui with the ink compositions of Ouchi.

Moreover, even if there were a motivation, which Applicants contend there is not, the combination of the references would still fail to teach all of the elements of Claim 13. In particular, Fukui fails to teach combining a self-dispersing pigment with a dispersant. Claim 13 clearly states that the ink has "a self-dispersible coloring agent" **and** "a surfactant represented by the following general formula (3)". Fukui fails to teach or suggest such a combination. Therefore, the Examiner cannot show a motivation to combine "a self-dispersible coloring agent" with "a surfactant represented by the following general formula (3)", or that there is a reasonable expectation of success of the combination of Fukui with Ouchi.

Ouchi teaches in paragraph [0067] (portion pointed out by the Examiner on page 2 of the current Office action) that "[t]he pigment for use in the invention preferably include those pigments which can be well dispersed in the above-described vehicles...." (emphasis added).

Fukui teaches an aqueous ink composition for ball-point pen containing water, a pigment, a surfactant, a pH adjustor, a shear viscosity reducing agent, and a moisturizer as essential components. Wherein the surfactant is a compound represented by the following general formula:



In the above formula, R is an 8-20C (un)saturated hydrocarbon, n is an integer of 3 to 30, and M is an alkali metal, ammonium, or alkylamine. The above ink composition is created for the purpose of providing an aqueous ink composition for ball-point pen which

achieves satisfactory ink release from the pen, which causes no trouble such as husky or broken line on paper surface, and which is excellent in the aging characteristic regarding the lubrication, the cap-off property writing performance, and the storage performance. See Fukui, Abstract and Claim 1.

Fukui teaches in paragraph [0010] that “the surfactant used for the ink composition of this invention has function of adhering to particles of the pigment to thereby disperse¹ the pigment in water, as well as of improving the lubricating property of the ball, namely, of imparting the smooth writing feeling; therefore, there is no need to add any lubricating agent to the surfactant”. (emphasis added). See attached partial English translation of Fukui found in Appendix A.

Namely, it is apparent that Fukui’s surfactant mainly functions as the dispersant of the pigment in the water. Accordingly, the surfactant of Fukui relates to a non-self-dispersible coloring agent (i.e., pigment). Thus, one of ordinary skill in the art would find no motivation to use the surfactant of Fukui together with a self-dispersible pigment, because a self-dispersible coloring agent generally does *not* require any dispersing agent.

Therefore, a person skilled in the art would not have been motivated to use the surfactant of Fukui together with Ouchi that teaches to use a self-dispersible pigment (“...those pigments which can be well dispersed in the above-described vehicles”; paragraph [0067]).

In addition, another function of the surfactant taught in Fukui is “of improving the lubricating property of the ball, namely of imparting the smooth writing feeling”, as discussed above. However, such function is not related to the ink-jet recording of the present application. Thus, the person skilled in the art would not have been motivated to combine the surfactant of Fukui with Ouchi for the purpose of producing a water-based ink for ink-jet recording.

¹ Please note that in Machine-assisted English translation of Fukui attached to the outstanding Office action, the original Japanese term is translated by using the English verb “distribute”.

In response, Examiner asserts that Ouchi is being used to teach everything including using a surfactant, and that the only element Ouchi does not teach is to use the specific surfactant of Claim 13. Therefore, Examiner asserts that it is obvious to combine the surfactant of Fukui with the ink composition of Ouchi. In support of this assertion, Examiner further asserts that Ouchi discloses that any kind of surfactant may be used. This, however, misrepresents the teachings of Ouchi.

In particular, Examiner asserts that Ouchi teaches the adding any kind of a surfactant in an amount of from 0.1% to 3% by weight in the examples. However, the examples on page 6 of Ouchi teach no such thing. Rather, Ouchi only teaches one example (i.e., Example 1) which includes a surfactant (see Table 1 on page 6). Furthermore, Ouchi does not teach that this is any kind of surfactant, but rather teaches that this is the specific surfactant Unigly VKN5002. As anyone of skill in the art knows, not just any kind of surfactant can be used. Rather, a surfactant must be selected which specifically works with the other chemicals in your composition so as to produce the desired results.

In this way, chemistry similar to baking. For example, a first cookie recipe may call for butter, sugar, flour, and salt, while a second cookie recipe may call for butter, sweetened chocolate, flour, and salt. One of ordinary skill in baking would know that you cannot add the sugar from the first cookie into the second cookie and obtain a desirable result. This is because the second cookie already uses sweetened chocolate. Therefore, the addition of more sweetener (i.e., sugar), would be very undesirable.

What the Examiner is attempting to do is basically mix the sugar from the first cookie with the ingredients of the second cookie. In other words, the Examiner is adding the surfactant of Fukui, the sole purpose of which is to disperse the non-self-dispersible coloring agent, with the composition (i.e., "ingredients") of Ouchi, which does not need a surfactant because it already includes a self-dispersible coloring agent. As adding sugar to an already sweetened cookie recipe may produce undesirable results, adding a surfactant to an ink composition that already has a self-dispersible coloring agent may similarly produce undesirable

results. The only surfactant that one of skill in the art would even contemplate adding to the self-dispersible colorant composition of Ouchi (based on the references cited) is the surfactant taught by Ouchi as being usable with such self-dispersible colorant compositions (i.e., Unigly VKN5002). The addition of any surfactant not specifically disclosed as being usable with a self-dispersible colorant would produce inconsistent and unknown results without a reasonable expectation of success. As such, one of skill in the art would not be motivated to use a surfactant disclosed for use with a non-self-dispersible coloring agent (i.e., that of Fukui) with the self-dispersible colorant disclosed in Ouchi.

This is not to say that only the surfactant listed in Ouchi could be used. Rather, only surfactants which have been disclosed as usable with self-dispersible coloring agents can be used. Since the surfactant of Fukui is not disclosed as being usable with a self-dispersible coloring agent, one of skill in the art would not combine the surfactant of Fukui with the composition of Ouchi.

Moreover, Examiner admits that Ouchi and Fukui fail to disclose that the propylene glycol ether is dipropylene glycol propyl ether. Rather, Examiner points to Satoh as disclosing this language of Claim 13, and asserts that it would be obvious to combine the teachings of Satoh with those of Ouchi and Fukui.

Regarding Satoh, Satoh teaches an ink for ink-jet recording which includes a pigment, an anionic surfactant, and a cationic surfactant; and with which it is possible to obtain a sharp image having little feathering and little bleeding with a high printing concentration even when an anionic surfactant is used as a dispersing agent for a pigment. See Satoh, Abstract; ¶¶ [0011] and [0012].

Thus, Satoh, like Fukui, only relates to inks with a pigment, which is a non-self-dispersible coloring agent that requires a dispersing agent to disperse it. Satoh, ¶¶ [0011] and [0019]. As such, while one of ordinary skill in the art might be motivated to combine Satoh with Fukui (which also uses a non-self-dispersible coloring agent), one of ordinary skill in the art would not be motivated to combine the teachings of Satoh with those of Ouchi (which uses a

self-dispersible coloring agent). The inherent chemical reactivity differences between self-dispersible and non-self-dispersible coloring agents, along with the utter lack of any reasonable expectation of success, provides no motivation to one of ordinary skill in the art to combine the teachings of Satoh with those of Ouchi.

Accordingly, there would be no motivation for a person of ordinary skill in the art to modify Ouchi by the teaching of Satoh in which the anionic surfactant is used as a dispersing agent for the pigment, because the *dispersible* pigment taught by Ouchi in paragraph [0067] generally does *not* require any dispersing agent.

Since the references cited by the Examiner (a) fail to teach or suggest a self-dispersible coloring agent and a surfactant represented by the following general formula (3), and (b) there is no motivation to combine the references and no reasonable expectation of success of the combination, Applicants respectfully assert that Examiner has failed to establish a prima facie case of obviousness of independent Claim 13, and corresponding claims 15-18 as they are ultimately dependent from Claim 13. Therefore, Applicants respectfully request that Examiner remove the rejections of claims 13 and 15-18 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Pub. No. 2001/0045175 to Ouchi et al. in view of JP 2000-191973 to Fukui, and further in view of U.S. Patent Application Pub. No. 2003/0061967 to Satoh et al.

It Is NOT Obvious to Combine the Dipropylene Glycol Propyl Ether of Satoh With the Disclosures of the Other Cited References

In addition to the above, the Examiner asserts on page 3 of the current Office Action that “Satoh et al. teaches that to have the deterioration free printed image, ink composition comprises 1 to 5% of dipropylene glycol propyl ether ([0024]-[0025]).”

With respect to the “dipropylene glycol propyl ether”, Satoh teaches that the ink may further contain a permeating agent (see ¶ [0023]), and describes dipropylene glycol-n-propyl ether as an example of the permeating agent (see ¶ [0024], which is the portion of Satoh to which Examiner points). In other words, Satoh describes dipropylene glycol-n-propyl ether

merely as an example of the permeating agent which may be optionally contained in the ink,
rather than being specifically used in relation to Satoh's invention.

Further, Satoh describes, in paragraph [0024], triethylene glycol-n-butyl ether as an example of the permeating agent together with dipropylene glycol-n-propyl ether.

In the present Application, Comparative Examples A3, B3, and C4 use triethylene glycol butyl ether in place of dipropylene glycol propyl ether. See Application, ¶¶ [0072], [0073], [0109], [0110], [0144], and [0145].

For the sake of argument, even if it would be obvious for a person of ordinary skill in the art to modify the ink composition taught by Ouchi by the teachings of Satoh, there would have been no suggestion or motivation for the person of ordinary skill in the art to select dipropylene glycol propyl ether, rather than triethylene glycol butyl ether.

Further, in view of the teaching in paragraph [0024] of Satoh listing triethylene glycol-n-butyl ether together with dipropylene glycol-n-propyl ether as the examples of permeating agents, there would be a possibility that a person skilled in the art who read Satoh would select triethylene glycol-n-butyl ether. In such a case, as shown by the results of the Comparative Examples of the current Application, it would not be possible to obtain the effects of the present Application, namely, a water base ink for ink-jet recording with satisfactory ink introduction performance, and not causing the feathering and the insufficient spread of the ink even when the printing is performed on the regular paper, as described, for example, in paragraph [0014] of the Specification. See also Application, ¶¶ [0087], [0089], [0121], [0122], [0151], and [0152]. Accordingly, there would also not be any reasonable expectation of success for a person of ordinary skill in the art to combine the teachings of Ouchi and Satoh.

Accordingly, even though Satoh teaches "dipropylene glycol-n-propyl ether" (albeit as the permeating agent optionally contained in the Satoh ink, as discussed above), there would be no motivation for a person of ordinary skill in the art to modify Ouchi by Satoh, also for the reasoning as discussed above.

III. REJECTION OF CLAIMS 13 AND 15-18 UNDER 35 U.S.C. §103(A) BASED ON KAPPELE IN VIEW OF FUKUI AND SATOH

On page 3 of the current Office Action, the Examiner rejects claims 13 and 15-18 under 35 U.S.C. § 103(a) as being unpatentable over Kappele in view Fukui and Satoh. These rejections are respectfully traversed and believed overcome in view of the following discussion.

The Cited References CANNOT Be Combined to Arrive At the Claimed Invention

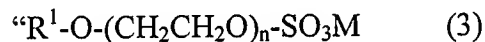
Claim 13 states:

“A water base ink for ink-jet recording comprising:

“a self-dispersible coloring agent;

“a propylene glycol ether; and

“a surfactant represented by the following general formula (3):



“wherein n represents an integer of 2 to 4, R¹ represents an alkyl group having a number of carbon atoms of 12 to 15, and M represents Na or triethanolamine; and

“wherein the propylene glycol ether is **dipropylene glycol propyl ether.**” (emphasis added).

The Examiner admits that Kappele fails to disclose a surfactant represented by the Formula (3) of the current application. As a result, the Examiner cites to Fukui for the disclosure of Formula (3). However, the teachings of Fukui are directed to an ink containing a non-self-dispersible coloring agent (i.e., a pigment), while Claim 13 contains a self-dispersible coloring agent. See Fukui, Abstract. Non-self-dispersible coloring agents behave very differently from self-dispersible coloring agents. Surfactants that work well with non-self-dispersible coloring agents do not necessarily work well with self-dispersible coloring agents.

In fact, Fukui specifically teaches that the disclosed compound of Formula 1 is included solely to disperse the pigment. This is made abundantly clear by the abstract, which

states that the ink composition of Fukui comprises water, (A) a pigment, (B) a surfactant, (C) a pH adjustor, (D) a shear viscosity reducing agent, and (E) a moisturizer, where the surfactant of component (B) is a compound of Formula 1. As such, Fukui relates to an aqueous ink which uses a pigment. As is well known, pigments are insoluble in water. As such, the surfactant of Formula 1 (the only surfactant included in the ink of Fukui) must necessarily be included for the sole purpose of dispersing the pigment.

In this way, Fukui is no different from the previous reference used by the Examiner, namely JP 2001-081372 to Ikemoto et al. ("Ikemoto"). Applicants previously argued that the combination of Ikemoto with the other references cited failed to render the current claims obvious. Examiner appears to have agreed with Applicants' arguments, as Examiner has withdrawn all of the rejections relating to Ikemoto. Therefore, Applicants must respectfully assert that the combination of Fukui with the other references also fails to render the current claims obvious.

Contrasting Fukui, the surfactants disclosed in Kappel at column 4, lines 33-50 (the portion to which Examiner cites) appear to be used as dispersants, as the ink of Kappel may contain a non-self-dispersible coloring agent, i.e., a pigment. See Kappel, Col. 6, Lns. 3-13. This is because a dispersant would only be needed if a non-self-dispersible coloring agent were used, since a self-dispersible coloring agent would require no dispersant. Moreover, there is no suggestion in either Kappel or Fukui that the compound of Formula 1 disclosed in Fukui is substitutable for the surfactants disclosed in Kappel. Rather, all that is taught is that the compound of Formula 1 disclosed in Fukui may be used with a non-self-dispersible coloring agent. As a result, one of ordinary skill in the art would find (1) no motivation to combine the teachings of Fukui with those teaching of Kappel which may relate to self-dispersible coloring agents and (2) no reasonable expectation of success of combining the teachings of Fukui with those teachings of Kappel which may relate to self-dispersible coloring agents.

The Examiner asserts that it is obvious to combine Kappel and Fukui. However, Examiner's logic on this matter is flawed. Fukui clearly teaches dispersing a non-self-dispersible

pigment by using a dispersant. Even if Kappel teaches the use of a self-dispersing coloring agent, which Applicants contend Kappel does not, there is no motivation to combine a dispersant with a self-dispersing coloring agent. Once the coloring agent is self-dispersing, there is no need to use a dispersing agent. Therefore, there is no reason to combine the dispersant of Fukui with the ink compositions of Kappel which may contain a self-dispersing coloring agent.

Moreover, even if there were a motivation, which Applicants contend there is not, the combination of the references would still fail to teach all of the elements of Claim 13. In particular, Fukui fails to teach combining a self-dispersing pigment with a dispersant. Claim 13 clearly states that the ink has “a self-dispersible coloring agent” **and** “a surfactant represented by the following general formula (3)”. Fukui fails to teach or suggest such a combination. Therefore, the Examiner cannot show a motivation to combine “a self-dispersible coloring agent” with “a surfactant represented by the following general formula (3)”, or that there is a reasonable expectation of success of the combination of Fukui with Kappel.

Kappel relates to a wet-rub resistant ink composition including a specific binder material. See Kappel, Abstract. The Examiner asserts on page 3 of the current Office Action that Kappel “discloses a water-based ink for ink jet recording including a dispersible coloring agent (column: 6, line: 3-67)...” However, Applicants respectfully assert that this portion of Kappel does not explicitly describe any pigment (i.e., coloring agent) which is self-dispersible.

Even if Kappel used any self-dispersible coloring agent (for example, self-dispersible pigment) as asserted by the Examiner, there would have been no need to use the surfactant taught by Fukui, which has the function to disperse the pigment in water, together with any self-dispersible pigment.

In fact, as discussed above regarding the rejection based on Fukui and Ouchi, it is apparent that Fukui’s surfactant mainly functions as the dispersant of the pigment in the water. Accordingly, the surfactant of Fukui relates to a non-self-dispersible coloring agent (i.e., pigment). Thus, one of ordinary skill in the art would find no motivation to use the surfactant of

Fukui together with a self-dispersible pigment, because a self-dispersible coloring agent generally does *not* require any dispersing agent.

Further, as discussed above regarding the rejection based on Fukui and Ouchi, another function of the surfactant taught in Fukui is “of improving the lubricating property of the ball, namely of imparting the smooth writing feeling”. However, such function is not related to the ink-jet recording of the present application. Thus, the person skilled in the art would not have been motivated to use the surfactant of Fukui together with Kappelé for the purpose of producing a water-based ink for ink-jet recording.

In response, Examiner asserts that Kappelé is being used to teach everything including using a surfactant, and that the only element Kappelé does not teach is to use the specific surfactant of Claim 13. Therefore, Examiner asserts that it is obvious to combine the surfactant of Fukui with the ink composition of Kappelé. In support of this assertion, Examiner further asserts that Ouchi discloses that any kind of surfactant may be used. This, however, misrepresents the teachings of Kappelé.

In particular, Examiner asserts that Kappelé teaches the adding any kind of a surfactant in an amount of from 0.1% to 5% by weight at column 4, lines 43-50, and in the examples. However, these portions of Kappelé teach no such thing. Rather, Kappelé only teaches the use of a select group of surfactants (i.e., the surfactants listed in Col. 4, Lns. 44-46). As such, Ouchi does not teach that this is any kind of surfactant, but rather teaches that one of the specifically listed surfactants can be used. As anyone of skill in the art knows, not just any kind of surfactant can be used. Rather, a surfactant must be selected which specifically works with the other chemicals in your composition so as to produce the desired results.

As discussed above, in this way, chemistry similar to baking. For example, a first cookie recipe may call for butter, sugar, flour, and salt, while a second cookie recipe may call for butter, sweetened chocolate, flour, and salt. One of ordinary skill in baking would know that you cannot add the sugar from the first cookie into the second cookie and obtain a desirable result.

This is because the second cookie already uses sweetened chocolate. Therefore, the addition of more sweetener (i.e., sugar), would be very undesirable.

What the Examiner is attempting to do is basically mix the sugar from the first cookie with the ingredients of the second cookie. In other words, the Examiner is adding the surfactant of Fukui, the sole purpose of which is to disperse the non-self-dispersible coloring agent, with the composition (i.e., “ingredients”) of Kappelé, which does not need a surfactant because it already includes a self-dispersible coloring agent. As adding sugar to an already sweetened cookie recipe may produce undesirable results, adding just any surfactant to an ink composition that already has a self-dispersible coloring agent may similarly produce undesirable results. The only surfactant that one of skill in the art would even contemplate adding to the self-dispersible colorant composition of Kappelé (based on the references cited) is the surfactant taught by Kappelé as being usable with such self-dispersible colorant compositions (i.e., the surfactants listed in Col. 4, Lns. 44-46). The addition of any surfactant not specifically disclosed as being usable with a self-dispersible colorant would produce inconsistent and unknown results without a reasonable expectation of success. As such, one of skill in the art would not be motivated to use a surfactant disclosed for use with a non-self-dispersible coloring agent (i.e., that of Fukui) with the self-dispersible colorant disclosed in Kappelé.

This is not to say that only the surfactants listed in Kappelé could be used. Rather, only surfactants which have been disclosed as usable with self-dispersible coloring agents can be used. Since the surfactant of Fukui is not disclosed as being usable with a self-dispersible coloring agent, one of skill in the art would not combine the surfactant of Fukui with the composition of Kappelé.

In addition, Examiner asserts that Kappelé discloses the addition of a surfactant in an amount of from 0.1% to 5% based on the Examples of Kappelé. However, Applicant was unable to determine any surfactant listed in the Examples of Kappelé. Moreover, the amounts of the constituents in the compositions of the examples are listed in terms of mass and volume, and not as a percentage. Accordingly, Applicant respectfully asserts that Kappelé fails to disclose the

use of a surfactant in the amount 0.1 to 3% as stated in Claim 16. Therefore, for Examiner to perfect his rejection, he must specifically indicate where the surfactants are listed in the Examples of Kappelé, as well as how Examiner arrived at the listed percentage range of 0.1% to 5%.

Moreover, Examiner admits that Kappelé and Fukui fail to disclose that the propylene glycol ether is dipropylene glycol propyl ether. Rather, Examiner points to Satoh as disclosing this language of Claim 13, and asserts that it would be obvious to combine the teachings of Satoh with those of Kappelé and Fukui.

Regarding Satoh, Satoh teaches an ink for ink-jet recording which includes a pigment, an anionic surfactant, and a cationic surfactant; and with which it is possible to obtain a sharp image having little feathering and little bleeding with a high printing concentration even when an anionic surfactant is used as a dispersing agent for a pigment. See Satoh, Abstract; ¶¶ [0011] and [0012].

Thus, Satoh, like Fukui, only relates to inks with a pigment, which is a non-self-dispersible coloring agent that requires a dispersing agent to disperse it. Satoh, ¶¶ [0011] and [0019]. As such, while one of ordinary skill in the art might be motivated to combine Satoh with Fukui (which also uses a non-self-dispersible coloring agent), one of ordinary skill in the art would not be motivated to combine the teachings of Satoh with those of Kappelé (which uses a self-dispersible coloring agent). The inherent chemical reactivity differences between self-dispersible and non-self-dispersible coloring agents, along with the utter lack of any reasonable expectation of success, provides no motivation to one of ordinary skill in the art to combine the teachings of Satoh with those of Kappelé.

Accordingly, there would be no motivation for a person of ordinary skill in the art to modify Ouchi by the teaching of Satoh in which the anionic surfactant is used as a dispersing agent for the pigment, because the *dispersible* pigment taught by Ouchi in paragraph [0067] generally does **not** require any dispersing agent.

Since the references cited by the Examiner (a) fail to teach or suggest a self-dispersible coloring agent and a surfactant represented by the following general formula (3), and (b) there is no motivation to combine the references and no reasonable expectation of success of the combination, Applicants respectfully assert that Examiner has failed to establish a prima facie case of obviousness of independent Claim 13, and corresponding claims 15-18 as they are ultimately dependent from Claim 13. Therefore, Applicants respectfully request that Examiner remove the rejections of claims 13 and 15-18 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,063,834 to Kappele et al. in view of JP 2000-191973 to Fukui, and further in view of U.S. Patent Application Pub. No. 2003/0061967 to Satoh et al.

It Is NOT Obvious to Combine the Dipropylene Glycol Propyl Ether of Satoh With the Disclosures of the Other Cited References

In addition to the above, the Examiner asserts on page 3 of the current Office Action that “Satoh et al. teaches that to have the deterioration free printed image, ink composition comprises 1 to 5% of dipropylene glycol propyl ether ([0024]-[0025]).”

As discussed above in relation to Ouchi, even though Satoh teaches “dipropylene glycol-n-propyl ether” (albeit as the permeating agent optionally contained in the Satoh ink, as discussed above), there would be no reasonable expectation of success or motivation for a person of ordinary skill in the art to modify Kappele by Satoh.

IV. REJECTION OF CLAIMS 13, 16, AND 18 UNDER 35 U.S.C. §103(A) BASED ON BROWN IN VIEW OF FUKUI AND SATOH

On page 5 of the current Office Action, the Examiner rejects claims 13 and 15-18 under 35 U.S.C. § 103(a) as being unpatentable over Brown in view Fukui and Satoh. These rejections are respectfully traversed and believed overcome in view of the following discussion.

The Cited References CANNOT Be Combined to Arrive At the Claimed Invention

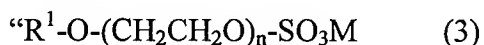
Claim 13 states:

“A water base ink for ink-jet recording comprising:

“a self-dispersible coloring agent;

“a propylene glycol ether; and

“a surfactant represented by the following general formula (3):



“wherein n represents an integer of 2 to 4, R¹ represents an alkyl group having a number of carbon atoms of 12 to 15, and M represents Na or triethanolamine; and

“wherein the propylene glycol ether is **dipropylene glycol propyl ether.**” (emphasis added).

The Examiner admits that Brown fails to disclose a surfactant represented by the Formula (3) of the current application. As a result, the Examiner cites to Fukui for the disclosure of Formula (3). However, the teachings of Fukui are directed to an ink containing a non-self-dispersible coloring agent (i.e., a pigment), while Claim 13 contains a self-dispersible coloring agent. See Fukui, Abstract. Non-self-dispersible coloring agents behave very differently from self-dispersible coloring agents. Surfactants that work well with non- self-dispersible coloring agents do not necessarily work well with self-dispersible coloring agents.

In fact, Fukui specifically teaches that the disclosed compound of Formula 1 is included solely to disperse the pigment. This is made abundantly clear by the abstract, which states that the ink composition of Fukui comprises water, (A) a pigment, (B) a surfactant, (C) a pH adjustor, (D) a shear viscosity reducing agent, and (E) a moisturizer, where the surfactant of component (B) is a compound of Formula 1. As such, Fukui relates to an aqueous ink which uses a pigment. As is well known, pigments are insoluble in water. As such, the surfactant of Formula 1 (the only surfactant included in the ink of Fukui) must necessarily be included for the sole purpose of dispersing the pigment.

In this way, Fukui is no different from the previous reference used by the Examiner, namely JP 2001-081372 to Ikemoto et al. (“Ikemoto”). Applicants previously argued that the combination of Ikemoto with the other references cited failed to render the current claims obvious. Examiner appears to have agreed with Applicants’ arguments, as Examiner has withdrawn all of the rejections relating to Ikemoto. Therefore, Applicants must respectfully assert that the combination of Fukui with the other references also fails to render the current claims obvious.

Contrasting Fukui, the surfactants disclosed in Brown are added to achieve the desired reduction of smear. Brown, Col. 2, Lns. 20-21. While Brown does disclose the use of a dispersant, such a dispersant would only be needed if a non-self-dispersible coloring agent was used. See Brown, Col. 2, Lns. 46-47 (“Dispersing agents may be used to help suspend the pigment particles in the ink composition.”). There is no suggestion in either Brown or Fukui that the compound of Formula 1 disclosed in Fukui is substitutable for the surfactants disclosed in Brown. As a result, one of ordinary skill in the art would find (1) no motivation to combine the teachings of Fukui with those of Brown and (2) no reasonable expectation of success of combining the teachings of Fukui with those of Brown.

The Examiner asserts that it is obvious to combine Brown and Fukui. However, Examiner’s logic on this matter is flawed. Fukui clearly teaches dispersing a non- self-dispersible pigment by using a dispersant. Even if Brown does teach the use of a self-dispersing coloring agent, which Applicants contend Brown does not, there is no motivation to combine a dispersant with a self-dispersing coloring agent. Once the coloring agent is self-dispersing, there is no need to use a dispersing agent. Therefore, there is no reason to combine the dispersant of Fukui with the ink compositions of Brown.

Moreover, even if there were a motivation, which Applicants contend there is not, the combination of the references would still fail to teach all of the elements of Claim 13. In particular, Fukui fails to teach combining a self-dispersing pigment with a dispersant. Claim 13 clearly states that the ink has “a self-dispersible coloring agent” **and** “a surfactant represented by

the following general formula (3)". Fukui fails to teach or suggest such a combination.

Therefore, the Examiner cannot show a motivation to combine "a self-dispersible coloring agent" with "a surfactant represented by the following general formula (3)", or that there is a reasonable expectation of success of the combination of Fukui with Brown.

Brown relates to an ink jet composition which exhibits a reduced tendency to smear upon application to a substrate, and includes a propylene glycol ether and/or a propylene glycol ether acetate, a surfactant, and a colorant. See Brown, Abstract. The Examiner asserts on 4 5 of the current Office action that Brown "discloses a water-based ink for ink jet recording including a dispersible coloring agent (column: 2, line: 39-60)..." However, Applicants respectfully assert that this portion of Brown does not explicitly describe any pigment (i.e., coloring agent) which is self-dispersible.

Even if Brown used any self-dispersible coloring agent (for example, self-dispersible pigment) as asserted by the Examiner, there would have been no need to use the surfactant taught by Fukui, which has the function to disperse the pigment in water, together with any self-dispersible pigment.

In fact, as discussed above regarding the rejection based on Fukui and Ouchi, it is apparent that Fukui's surfactant mainly functions as the dispersant of the pigment in the water. Accordingly, the surfactant of Fukui relates to a non-self-dispersible coloring agent (i.e., pigment). Thus, one of ordinary skill in the art would find no motivation to use the surfactant of Fukui together with a self-dispersible pigment, because a self-dispersible coloring agent generally does *not* require any dispersing agent.

Further, as discussed above regarding the rejection based on Fukui and Ouchi, another function of the surfactant taught in Fukui is "of improving the lubricating property of the ball, namely of imparting the smooth writing feeling". However, such function is not related to the ink-jet recording of the present application. Thus, the person skilled in the art would not have been motivated to use the surfactant of Fukui with Brown for the purpose of producing a water-based ink for ink-jet recording.

In response, Examiner asserts that Brown is being used to teach everything including using a surfactant, and that the only element Brown does not teach is to use the specific surfactant of Claim 13. Therefore, Examiner asserts that it is obvious to combine the surfactant of Fukui with the ink composition of Brown. In support of this assertion, Examiner further asserts that Brown discloses that any kind of surfactant may be used. This, however, misrepresents the teachings of Brown.

In particular, Examiner asserts that Brown teaches the adding any kind of a surfactant in an amount of from 0.1% to 3% by weight at column 2, lines 20-40, and in the examples. However, these sections of Brown teach no such thing. Rather, Brown only teaches the use of a select group of surfactants (i.e., the surfactants listed in Col. 2, Lns. 20-40). As such, Brown does not teach that this is any kind of surfactant, but rather teaches that one of the specifically listed surfactants can be used. As anyone of skill in the art knows, not just any kind of surfactant can be used. Rather, a surfactant must be selected which specifically works with the other chemicals in your composition so as to produce the desired results.

In this way, chemistry similar to baking. For example, a first cookie recipe may call for butter, sugar, flour, and salt, while a second cookie recipe may call for butter, sweetened chocolate, flour, and salt. One of ordinary skill in baking would know that you cannot add the sugar from the first cookie into the second cookie and obtain a desirable result. This is because the second cookie already uses sweetened chocolate. Therefore, the addition of more sweetener (i.e., sugar), would be very undesirable.

What the Examiner is attempting to do is basically mix the sugar from the first cookie with the ingredients of the second cookie. In other words, the Examiner is adding the surfactant of Fukui, the sole purpose of which is to disperse the non-self-dispersible coloring agent, with the composition (i.e., "ingredients") of Brown, which does not need a surfactant because it already includes a self-dispersible coloring agent. As adding sugar to an already sweetened cookie recipe may produce undesirable results, adding a surfactant to an ink composition that already has a self-dispersible coloring agent may similarly produce undesirable

results. The only surfactant that one of skill in the art would even contemplate adding to the self-dispersible colorant composition of Brown (based on the references cited) is the surfactant taught by Brown as being usable with such self-dispersible colorant compositions (i.e., the surfactants listed in Col. 2, Lns. 20-40). The addition of any surfactant not specifically disclosed as being usable with a self-dispersible colorant would produce inconsistent and unknown results without a reasonable expectation of success. As such, one of skill in the art would not be motivated to use a surfactant disclosed for use with a non-self-dispersible coloring agent (i.e., that of Fukui) with the self-dispersible colorant disclosed in Brown.

This is not to say that only the surfactants listed in Brown could be used. Rather, only surfactants which have been disclosed as usable with self-dispersible coloring agents can be used. Since the surfactant of Fukui is not disclosed as being usable with a self-dispersible coloring agent, one of skill in the art would not combine the surfactant of Fukui with the composition of Brown.

Moreover, Examiner admits that Brown and Fukui fail to disclose that the propylene glycol ether is dipropylene glycol propyl ether. Rather, Examiner points to Satoh as disclosing this language of Claim 13, and asserts that it would be obvious to combine the teachings of Satoh with those of Brown and Fukui.

Regarding Satoh, Satoh teaches an ink for ink-jet recording which includes a pigment, an anionic surfactant, and a cationic surfactant; and with which it is possible to obtain a sharp image having little feathering and little bleeding with a high printing concentration even when an anionic surfactant is used as a dispersing agent for a pigment. See Satoh, Abstract; ¶¶ [0011] and [0012].

Thus, Satoh, like Fukui, only relates to inks with a pigment, which is a non-self-dispersible coloring agent that requires a dispersing agent to disperse it. Satoh, ¶¶ [0011] and [0019]. As such, while one of ordinary skill in the art might be motivated to combine Satoh with Fukui (which also uses a non-self-dispersible coloring agent), one of ordinary skill in the art would not be motivated to combine the teachings of Satoh with those of Brown (which uses a

self-dispersible coloring agent). The inherent chemical reactivity differences between self-dispersible and non-self-dispersible coloring agents, along with the utter lack of any reasonable expectation of success, provides no motivation to one of ordinary skill in the art to combine the teachings of Satoh with those of Brown.

Accordingly, there would be no motivation for a person of ordinary skill in the art to modify Ouchi by the teaching of Satoh in which the anionic surfactant is used as a dispersing agent for the pigment, because the *dispersible* pigment taught by Ouchi in paragraph [0067] generally does *not* require any dispersing agent.

Since the references cited by the Examiner (a) fail to teach or suggest a self-dispersible coloring agent and a surfactant represented by the following general formula (3), and (b) there is no motivation to combine the references and no reasonable expectation of success of the combination, Applicants respectfully assert that Examiner has failed to establish a prima facie case of obviousness of independent Claim 13, and corresponding claims 16 and 18 as they are ultimately dependent from Claim 13. Therefore, Applicants respectfully request that Examiner remove the rejections of claims 13, 16, and 18 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,888,287 to Brown et al. in view of JP 2000-191973 to Fukui, and further in view of U.S. Patent Application Pub. No. 2003/0061967 to Satoh et al.

It Is NOT Obvious to Combine the Dipropylene Glycol Propyl Ether of Satoh With the Disclosures of the Other Cited References

In addition to the above, the Examiner asserts on page 3 of the current Office Action that “Satoh et al. teaches that to have the deterioration free printed image, ink composition comprises 1 to 5% of dipropylene glycol propyl ether ([0024]-[0025]).”

As discussed above in relation to Ouchi, even though Satoh teaches “dipropylene glycol-n-propyl ether” (albeit as the permeating agent optionally contained in the Satoh ink, as discussed above), there would be no reasonable expectation of success or motivation for a person of ordinary skill in the art to modify Brown by Satoh.

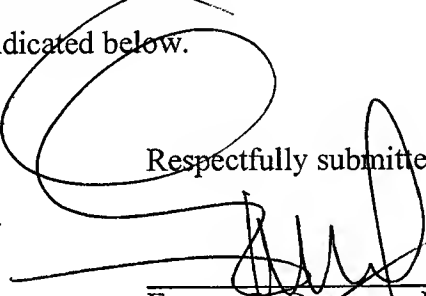
V. REJECTION OF CLAIMS 19 AND 20 UNDER 35 U.S.C. §103(A)

On pages 6-7 of the current Office Action, the Examiner rejects claims 19 and 20 under 35 U.S.C. § 103(a) as being unpatentable over various references. These rejections are respectfully traversed and believed overcome in view of the following discussion.

Claims 19 and 20 are each ultimately dependent from Claim 13. As Claim 13 is allowable, so must be claims 19 and 20. Therefore, Applicants respectfully request the Examiner remove the rejections of Claims 19 and 20 under 35 U.S.C. § 103(a).

Based upon the above remarks, Applicant respectfully requests reconsideration of this application and its early allowance. Should the Examiner feel that a telephone conference with Applicant's attorney would expedite the prosecution of this application, the Examiner is urged to contact him at the number indicated below.

Respectfully submitted,



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Appendix A

English translation of paragraph [0010]:

[0010] The surfactant used for the ink composition of this invention has function of adhering to particles of the pigment to thereby disperse the pigment in water as well as of improving the lubricating property of the ball, namely, of imparting the smooth writing feeling. Therefore, there is no need to add any lubricating agent separately.

A surfactant represented by general formula "Formula 1" is excellent both in the pigment dispersability and the lubricating property.



In the formula, when R is less than 8 or exceeds 20, the object of the invention cannot be achieved. The examples of the surfactant includes: sodium polyoxyethylene lauryl ether sulfate (trade name: EMAL 20C, E-27C, E-70C; manufactured by KAO CORPORATION), sodium polyoxyethylene alkyl ether sulfate (trade name: EMAL 20 CM, LEVENOL WX, LATEMUL WX; manufactured by KAO CORPORATION), polyoxyethylene oleyl ether sulfate ester ammonium salt (trade name: HITENOL 08E, 18E; manufactured by DAI-ICHI KOGYO SEIYAKU Co., Ltd.), polyoxyethylene lauryl ether sodium sulfate (trade name: NIKKO L SBL-2N-27, 3N-27, 4N; manufactured by NIKKO CHEMICALS Co., Ltd.), polyoxyethylene lauryl ether sulfuric acid triethanolamine (trade name: SBL-2T-36, 4T; manufactured by NIKKO CHEMICALS Co., Ltd.), and the like. When a cationic surfactant is used, the storage performance of the ink is lost. Further, the lubricating property or the pigment dispersability is lacking in anionic surfactant such as polyoxyethylene-alkyl-ether phosphoric ester, etc., and in nonionic surfactant.